

INQUIRY INTO DEFENCE INDUSTRY IN NEW SOUTH WALES

Organisation: Department of Defence - Australian Government

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Defence Submission to the Standing Committee on State Development Inquiry into Defence Industry in New South Wales

Summary

1. Defence welcomes the New South Wales (NSW) Government's and Parliament's interest in strengthening local defence industry to support Australia's defence and national security. With the release of the 2016 Defence White Paper, Integrated Investment Program, and Defence Industry Policy Statement on 25 February 2016 and the Naval Shipbuilding Plan on 16 May 2017, there is clear direction to implement a major renewal of Defence capability and with it a strengthening of Australia's defence industry. The scale and long-term nature of Defence's requirements, including in areas such as the continuous naval shipbuilding programs, require a national approach and partnership between Defence and State and Territory Governments.
2. Australia's industrial base is a fundamental enabler of Australia's military capabilities, and an integral element of the nation's defence. Defence welcomes the announcement of the NSW Government's Defence and Industry Strategy – *Strong, Smart and Connected* and the establishment of *Defence NSW*. Defence also welcomes increasing collaboration between NSW and the Australian Capital Territory (ACT) in the defence sector.
3. Through new and expanded policies and programs, Defence is supporting Australia's defence industry to develop the right technology, skills and capabilities to meet Defence's current and future needs. There are considerable opportunities for local defence industry to contribute to Defence, with accompanying economic and community benefits. Ensuring that NSW businesses are aware of the opportunities and can leverage the support available from Defence and the broader Commonwealth is an important objective for collaboration between Defence, the NSW Government, and NSW industry.

Defence Industry Policy Context

4. The Defence White Paper and the Integrated Investment Program established a long-term plan to build Australia's defence capability. The Integrated Investment Program outlined an investment of approximately \$195 billion over the decade to FY2025-26 (now approximately \$200 billion from FY 2017-18 to FY 2026-27) to strengthen defence capability. The Defence Industry Policy Statement committed to maximising Australian industry involvement in meeting Defence capability needs.
5. The Government's release of the Naval Shipbuilding Plan on 16 May 2017 provided long-term direction on the development of Australia's naval shipbuilding enterprise to support the continuous shipbuilding program. The Government's policy direction reinforced the importance of a national approach, including drawing on supply chains across Australia, to achieve Defence's strategy and capability goals.
6. The Government's defence industry policy focuses on maximising Australian industry involvement and innovation in the delivery of Defence capability. The Defence Industry Policy Statement (DIPS) recognised that a globally competitive Australian industry that is able to cost effectively meet our capability needs is a strategic asset. It reinforced that industry capability is about harnessing technology and innovation. The Statement announced \$1.6 billion investment in defence industry and innovation programs over the next decade.

7. The Centre for Defence Industry Capability (CDIC) and the Defence Innovation Hub were launched by the Minister for Defence Industry on 5 December 2016. This was complemented with the launch of the Next Generation Technologies Fund on 16 March 2017. The Naval Shipbuilding College, to be established in early 2018 will provide a focal point for ensuring that the workforce, skills and expertise is in place across Australia to deliver the continuous naval shipbuilding programs.
8. Delivering Australia's current and future defence capability is a national endeavour requiring a stronger Defence partnership with State and Territory Governments and the involvement of competitive Australian companies across national supply chains. NSW already makes a significant contribution to Defence, drawing on a range of industry capabilities, and supports Defence's substantial presence in NSW. There are 17 Defence establishments within NSW, which currently accommodate approximately 27,700 Defence personnel.
9. NSW has a diverse and valuable defence industry and research base to support Defence's needs. Multiple 'hubs' or 'clusters' of defence activity have evolved, with Small to Medium Enterprises (SMEs) and primes co-located with significant Defence facilities and other major, but related, commercial enterprises. While NSW has a broad-based defence industry supporting Defence, a few areas of particular focus follow:

Aerospace

10. Aerospace is a very important component of the NSW defence industry for Defence. NSW supports the F/A-18 Classic Hornet, Wedgetail Airborne Early Warning and Control Aircraft, Black Hawks, the Navy rotary wing fleet, C130's and initially, the newly acquired C-27J. This includes repair and maintenance as well as systems manufacturing. The NSW aerospace sector includes companies such as Airbus, Boeing, Lockheed Martin, Raytheon and BAE and their SME supply chains.

Maritime

11. Companies in NSW have also been able to secure a sizeable amount of maritime maintenance and upgrade contracts. Garden Island Defence Precinct in Sydney (the homeport for Navy's major fleet units on the East Coast), which includes the Captain Cook Graving Dock, is ideally placed to undertake such maintenance and upgrades. This combines with the residual expertise already evident within the maritime sector in NSW, with companies such as BAE and Thales already providing capability to Defence in NSW.
12. A 2017 study into the economic contribution of naval bases in Sydney estimated that Defence's Sydney Naval Bases contribute approximately \$637 million per annum to the NSW economy. The bases included in these estimates are Garden Island Defence Precinct, HMA Ships Waterhen, Watson and Penguin and relevant naval components of Randwick Barracks and Living-in Accommodation at North Strathfield and Homebush. This estimate excludes the contribution that HMA Ships *Albatross* and *Creswell* make to the NSW economy.

Information and Communication Technologies

13. NSW is a national leader in the provision of Information, Communication Technologies (ICT) products and services. Sydney is the regional home for many of the global leaders in ICT who also participate in the Defence sector, including IBM, Capgemini and Adobe. The presence of these large organisations influences the broader ICT sector and encourages the growth of start-ups and SMEs due to the opportunities available in their supply chains and the ability to access collaborative growth initiatives such as ATP Innovations and the Founder Institute.

Naval Shipbuilding Plan

14. The Naval Shipbuilding Plan, released by the Australian Government on 16 May 2017, outlined the Government's plan for the largest recapitalisation of the Royal Australian Navy (RAN) since the Second World War. Based on an investment of \$89 billion in new naval capability and the sustainment of a larger and more complex naval fleet, the Plan outlines an approach to achieve a national shipbuilding enterprise, underpinned by a strong Commonwealth partnership with the State and Territory jurisdictions. The Plan also notes that the naval shipbuilding workforce will need to expand considerably by 2026, including to sustain the RAN fleet.
15. The Naval Shipbuilding College is a key initiative in the Naval Shipbuilding Plan. The College will attract, train, and retrain the naval shipbuilding workers across Australia to achieve the continuous naval shipbuilding program. A Request for Proposal for the Naval Shipbuilding College was released on 26 May 2017. The College will be established by early 2018. While the College will be headquartered at Adelaide, it will provide opportunities for education and training providers across Australia and will support the training needs of the national shipbuilding workforce, including in NSW. The NSW Government will play a critical role in contributing to the capable workforce required to deliver the Plan.

Future Defence Investment in NSW

16. Defence will maintain a significant presence in NSW over the next decade and beyond. The 2016 Defence White Paper and Integrated Investment Program identified a number of future investments in defence capability and infrastructure based in NSW. The planned investments include:
 - a. Critical infrastructure remediation and the upgrading of Garden Island Defence Precinct to enable it to continue to support an expanded fleet and accommodate larger platforms such as the Canberra class amphibious ships (LHD) and the new Hobart class guided missile destroyers (DDG).
 - b. Introduction of the three DDG into service by the early 2020s, replacing the three Adelaide class frigates currently homeported at Fleet Base East. HMAS *Choules* will also be upgraded.
 - c. Nine new anti-submarine warfare frigates will replace the fleet of eight Anzac class frigates, three of which are currently homeported at Fleet Base East. The new frigates will be introduced from the late 2020s and will be homeported at Fleet Base East and Fleet Base West (HMAS *Stirling*, Western Australia).

- d. Two new replenishment vessels will be introduced into service by 2026, including the replacement for HMAS *Success*, homeported at Fleet Base East. A third replenishment or additional logistics vessel will follow in the late 2020s and may potentially also be homeported at Fleet Base East.
 - e. Four of the six Huon class Mine Hunter Coastal vessels (MHC) based at HMAS *Waterhen* (Waverton, NSW) will be extended into the 2030s.
 - f. New maritime tactical unmanned aerial systems will be acquired to deploy on a range of Navy vessels and will be based at the Naval Air Station at Nowra (HMAS *Albatross*).
 - g. Royal Australian Air Force (RAAF) Base Williamtown will receive upgrades to its airfield, weapons, and training facilities to support the Australian Defence Force's strike and air combat capabilities. The infrastructure works will support the introduction into service of the F-35A Lightning II Joint Strike Fighter aircraft from 2020.
 - h. Defence Establishments Myambat and Orchard Hills will store new weapon systems through facilities enhancements.
 - i. Facilities upgrades at Holsworthy Barracks to 2025-26 will support vehicle storage and accommodation. From the mid-2020s special operations light utility helicopters will also operate from Holsworthy Barracks in support of Special Forces.
 - j. The maritime MRH-90 troop lift helicopters and 24 MH-60R combat helicopters based at HMAS *Albatross* (Nowra) will be supported by new facilities, including new training platforms for Navy and Army aircrew.
 - k. Defence logistics capability, including storage distribution and logistics facilities at Moorebank will be enhanced as part of the implementation of the Defence Logistics Transformation Program.
 - l. The digital hydrographic systems at the Australian Hydrographic Office in Wollongong will be upgraded by 2025.
 - m. Defence's space operations capability will be upgraded at the Headquarters Joint Operations Command in Bungendore.
 - n. The Army Recruitment Training Centre at Kapooka, near Wagga, will also be upgraded.
17. Defence's investment in capability development, enhancement and sustainment will provide opportunities for local industry to support Defence's requirements in acquisition and sustainment. With many of the future acquisitions based on a national approach that is location agnostic, it will be incumbent on each State Government and industry to assess that state's industry's strengths and opportunities, leverage Commonwealth programs aimed at enhancing defence industry capability, and to partner with the Prime contractors competing for the projects to seek to maximise local industry involvement. Where the location of major construction projects is already determined, such as for the continuous naval shipbuilding

programs, there will still be considerable opportunities for other state-based industry to contribute into national supply chains. Engagement with Defence's contracted prime contractors will be important in promoting and supporting opportunities for local industry in these national supply chains.

18. Examples of some current approved Defence acquisition and sustainment projects in NSW and/or supported by NSW industry are at [Attachment A](#).

Defence Estate in NSW

19. The Defence estate's current disposition reflects its historical evolution since pre-Federation times and, as a result, embodies a measure of redundancy and inefficiency. The burden of history means that the current estate is not optimally postured for existing and emerging strategic needs. Defence seeks to overcome these limitations to achieve an estate that aligns with strategic guidance, is affordable, more sustainable and better supports capability.
20. Over the next decade, there will be significant investment in Defence facilities such as airfields, wharves, training areas, explosive ordnance storage, fuel installations and test and experimentation assets has been accorded a high priority in the Integrated Investment Program and additional money has been allocated to allow Defence to address estate maintenance issues on a more systematic basis.
21. As a key enabler of Defence capability, increased infrastructure investment will not be limited to expanding or remediating existing facilities. It will also involve modifying and modernising the Defence estate footprint to accommodate new high technology capabilities and larger platforms, and to ensure that Defence is appropriately placed to meet future strategic requirements. Over the next 50 years, this may involve developing new bases, wharves, airfields, training areas and weapons ranges. Equally importantly, it will involve disposing of property and facilities that no longer meet Defence requirements.
22. Defence will continue to work closely with the NSW Government in achieving its objectives from the current and future Defence estate in NSW. Information on key current Defence bases and facilities in NSW is at [Attachment B](#).

Maximising Opportunities for NSW Industry

23. The Government's defence industry policy has four key pillars:
 - a. Maximise competitive Australian industry involvement in meeting our strategic and capability objectives.
 - b. Strategically plan, guide, and develop Australia's industrial base to be positioned to meet our future needs.
 - c. Maximise industry resilience and sustainability to meet our needs through increased productivity, growth, employment, upskilling, innovation, and movement up the value add technology chain.
 - d. Harness Australian industry innovation to provide warfighting advantage and increased Defence effectiveness.

24. Defence seeks to maximise opportunities and provide support for Australian industry involvement in building and sustaining Defence capability. Defence has reset its relationship with industry through a number of initiatives. Defence now formally recognises Australian industry as a Fundamental Input to Capability. Practical implementation has been embedded in the Defence Capability Life Cycle, incorporating industry consultation and recognition of the significant role industry plays during the planning and execution of acquiring and sustaining Defence capability.
25. Defence has established dedicated naval shipbuilding and defence industry forums with the State and Territory Governments which play a very important role in promoting information sharing and collaboration in support of our national defence capability and industry objectives. These forums meet regularly and reflect Defence's commitment to partner with the States and Territories. These forums are complemented by the annual Defence-NSW Government Forum and a range of other issue-specific engagement mechanisms across the Defence portfolio.
26. Defence also engages regularly with the peak defence industry bodies, which include the Australian Industry Group Defence Council and the Australian Industry Defence Network. Furthermore, Defence engages with the Australian Business Defence Industry, a unit within the NSW Business Chamber. NSW based defence industry is well represented in peak industry bodies. There are other more NSW-specific peak bodies such as the Sydney Aerospace and Defence Industry Group and other metropolitan and regional defence and other industry sector groups. Defence values the contribution that industry bodies make to Defence policy and capability and encourages industry to use peak industry bodies to engage with Defence on matters of common interest or concern.
27. The Australian Industry Capability (AIC) Program is the major driver of Australian industry involvement in delivery of Defence capability, requiring tenderers to provide AIC Plans as part of their tender response for any materiel project of \$20 million and above. The Program has been strengthened to require tenderers to more clearly demonstrate their engagement with Australian industry and their plans for Australian industry involvement over the life of a project, innovation and technology transfer, and export opportunities. For SMEs, greater awareness of who their primary customer is will be important to engage early and establish commercial business relationships noting that often, the primary customer will be a defence prime or multi-national company. Competitive companies will have significant opportunities to support national level supply chains and NSW based projects.
28. Defence is developing the first Defence Industry Capability Plan (DICP) and Sovereign Industrial Capabilities for release in 2017 to support Defence's ability to plan, guide and support the Australian industrial base. The DICP will set out the Government's objectives for the growth of Australian industry over the next decade, opportunities for Australian industry to support Defence, and how Defence will partner with Australian industry to help realise those opportunities. Once released, State Governments and industry will be able to use this Plan to inform state-based industry development.
29. The Government will also release a Defence Export Strategy later in 2017 providing a plan to grow our defence industry exports in support of our foreign and trade policy, and defence capability and national security objectives. Defence acknowledges that exports promote greater industry competitiveness, resilience and sustainability to support Defence's capability

needs. The Strategy will also address how Defence will work with the State and Territory Governments and industry to better coordinate export support and programs, including participation in international trade shows and overseas engagement. A range of NSW companies are already heavily involved in the Global Supply Chain and Team Defence Australia initiatives managed by the CDIC on behalf of Defence. There are opportunities to strengthen collaboration in this area as part of a more coordinated approach to defence industry development.

30. Defence also has a major focus on defence industry skilling and encouragement of Science, Technology, Engineering and Mathematics (STEM) skills to ensure that Australian defence industry has a workforce with the right skills to meet current and future Defence demand in an environment of rapid technological change. This is also a major focus as part of the implementation of the Naval Shipbuilding Plan and the Naval Shipbuilding College will have a key role in this area as part of growing Australia's naval shipbuilding industry.

School Pathways Programme

31. In NSW, specifically the Hunter Region, Defence has supported the Advanced Technology School Pathways Programme (SPP), known locally as the ME Program, since 2009-10. The SPP was established with the aim of addressing the skills shortage in defence industry by increasing the pool of young people ready to move from school into further education and apprenticeships; internships; scholarships and part-time work/study combinations in defence industry. The SPP also aims to increase employer awareness of the available options for recruiting young people and the value to business in doing so.

Subs in Schools and F1 in Schools Technology Challenges

32. Defence has supported the STEM based SUBS in Schools and F1 in Schools Technology Challenges via a sponsorship arrangement with Re-Engineering Australia since 2009. The technology challenges raise young people's awareness of defence industry careers and create excitement about STEM through problem solving/inquiry based challenges with a broad national reach.
33. The technology challenges also link schools, industry, TAFEs, universities and parents in a collaborative and experimental learning environment which encourages students to collaborate with industry partners within the context of their projects to learn about engineering principles such as physics, aerodynamics, design, manufacture, leadership, teamwork, media skills and project management, and apply them in a practical, imaginative, competitive and exciting way.

Defence Engineering Internship Program

34. The Defence Engineering Internship Program (DEIP) has been an initiative of the Department of Defence since 2012. The DEIP aims to create engineering pathways into the defence sector and provide engineering students with an incentivised opportunity to gain experience in defence industry. The program was based on the premise that engineering skills are a principal input into much of the sustainment work of the Australian Defence Force.
35. In this program, eligible Australian defence SMEs have the opportunity to market defence industry as an innovative, interesting and viable career path for engineering students who

undertake a sponsored work placement in their firm. The program attracts high performing engineering students in a competitive application process. In round five of the DEIP (2017), 7 of 30 interns (or 23.3% of interns) were placed into NSW based defence industry SMEs.

36. Defence is developing a ten year skilling and STEM Strategy for Australian defence industry. Based on the demand outlined in the Defence Industrial Capability Plan and the Naval Shipbuilding Plan, the analysis will address the continuum from early stage engagement of school students in defence-related STEM courses, through to defence sector skilling and culminate in the development of the ten-year skilling and STEM strategy for Defence industry to be released in mid-2018.
37. The Strategy will be cognisant of STEM strategies and programs developed by State and Territory Governments. As with the development of the Naval Shipbuilding College and related workforce strategy and initiatives, Defence will consult with the relevant State Government Departments and industry in developing these initiatives.

Defence Science Partnership agreements with NSW universities

38. Defence recognises the need to contribute to the national development of Australian STEM capabilities through a variety of programs. Defence Science and Technology Group (DST) is working with NSW universities in the following areas:
 - a. Women in Science and Engineering scholarships offered in partnership with five Australian universities, including three students from the University of NSW and the University of Sydney.
 - b. Student placement programs with vacation work experience, industry and graduate experience placements with 7 students in 2016-2017 coming from NSW universities.
 - c. Four Cadetships have been awarded to high-performing tertiary students at NSW universities undertaking study in technology priority areas.
 - d. Over the past three years, DST has engaged 35 early career researchers from NSW universities as ongoing employees in priority science and technology areas including: Computer Sciences, Autonomous Systems, Electronic Warfare, and Information Systems.
 - e. DST partners with a number of NSW university and industry practical-experience programs that support the development of future workforce skilling. These include: Macquarie University, the University of NSW, Defence Pitch at Parliament, and Future-Proofing STEM Industries with both universities and industry.
39. The Defence Science Partnership framework allows for a number of Agreements, including research agreements, collaborative agreements and scholarships. DST currently has the following engagements:
 - a. Macquarie University: 6 agreements valued at \$555,067;
 - b. University of NSW: 29 agreements valued at \$2,214,465;
 - c. University of Newcastle: 2 agreements valued at \$130,003;

- d. University of Sydney: 24 agreements valued at \$1,375,534;
 - e. University of Technology Sydney: 5 agreements valued at \$665,182;
 - f. University of Western Sydney: 3 agreements valued at \$282,559; and
 - g. University of Wollongong: 5 agreements valued at \$3,204,627.
40. More broadly, DST is supporting the establishment of the NSW Defence Innovation Network (DIN). The DIN will operate in a similar manner to the Defence Science Institute in Victoria which links DST with State university networks.

Centre for Defence Industry Capability

41. The CDIC has a very important partnership and delivery role in Defence's defence industry policy and planning, and is co-developing a number of initiatives highlighted above. The CDIC is funded by Defence and delivered by the Department of Industry, Innovation and Science as part of AusIndustry range of business support programs. The CDIC is responsible to the Minister for Defence Industry. The CDIC provides advice to Australian defence industry, supports industry growth, and facilitates innovation, offering:
- a. advisory and facilitation services to defence sector small to SMEs to improve business management, skills development, innovation and access to export initiatives and international and domestic supply chains;
 - b. grants to defence sector SMEs to implement recommendations from advisory and facilitation services;
 - c. strategic advice to government and key sector stakeholders on the development of a sustainable defence industry in line with Australia's defence priorities; and
 - d. identifying strategic industry capability gaps and solutions and funding Industrial Capability Projects to address them through procurement processes.
42. The CDIC has an office in Sydney, through AusIndustry, and has three advisers dedicated to working with defence industry, state entities and industry groups across NSW region. The NSW presence is supplemented by advisers nationally. Since the launch of the CDIC, advisers have delivered presentations to state-wide and local defence industry groups throughout NSW as part of Defence and Department of Industry, Innovation and Science outreach activities. These events have raised awareness of CDIC services and collaboration with Defence major projects, and provided advice on doing business with Defence and entering Defence supply chains. Examples include: Naval Shipbuilding and Future Submarine Industry Briefings to Sydney and Newcastle region businesses; and workshops through the Entrepreneurs Programme, in conjunction with the Australian Industry Group and Hunternet, on accessing defence supply chain opportunities.
43. NSW based companies are increasing engagement with the CDIC. In the period since the CDIC's launch on 5 December 2016 up until 12 July 2017, CDIC service types of assistance to NSW businesses have included: Business Improvement (22%), Defence Market Preparedness (35%), Skills Development (14%), Innovation Proposal Facilitation (13%), Supplier Continuous Improvement Program (7%), Export and Supply Chain Facilitation (4%) and New Air Combat Capability Assistance (6%).

44. As the single entry point for Australian industry to Defence, the CDIC is a critical asset for state-based industry seeking to position to support Defence's current and future needs. The CDIC is working closely with the NSW Government and Defence NSW to maximise collaboration in support of defence industry. A priority for the CDIC is to establish formal collaboration arrangements with each State and Territory Government. Defence encourages the NSW Government and industry to leverage the opportunities available through the CDIC.

Innovation, Research and Development

45. There are major opportunities for state-based industry and the research sector to partner with Defence to support Defence capability.

Defence Innovation Hub

46. The Defence Innovation Hub was launched on 5 December 2016 as part of the Government's \$1.6 billion investment in Defence innovation. The objective is to build the innovation capabilities of Australian industry and research organisations, and to deliver innovative solutions for Defence capability. The Hub is managing a portfolio of Defence innovation investments, bringing together Defence, industry, academia, and research institutions to collaborate on innovative technologies that can be developed into advanced capability for Defence.
47. Through the Defence Innovation Hub, Defence will invest \$640 million over the decade to support Australian industry and research organisations to mature and accelerate the development of defence technologies.
48. The Defence Innovation Hub is responsible for:
- a. clearly articulating Defence capability needs and challenges;
 - b. requesting proposals from industry and academia for innovative capabilities;
 - c. providing recommendations on funding priorities for innovation activities;
 - d. building collaborative programs with Defence stakeholders and contract management for innovation activities, including supporting the testing and assessment of innovation projects; and
 - e. championing innovation across Defence.
49. In order to remove barriers to innovation and deliver a streamlined, agile, single innovation pipeline, the Defence Innovation Hub has adopted: agile business processes and calculated risk-taking to harness brought ideas; new contracting frameworks; new intellectual property policies; and new governance, assessment and funding models to allow quick decision-making.
50. A number of existing Defence innovation programs now operate under the strategic guidance of the Defence Innovation Hub to deliver a more streamlined and coherent approach in innovation investment, they include:
- a. Capability Technology Demonstrator;
 - b. Rapid Prototyping Development and Evaluation;
 - c. Defence Innovation Realisation Fund;

- d. Priority Industry Capability Development Fund; and
 - e. Chief Information Officer Group Innovation Program.
51. The Defence Innovation Hub has developed an intellectual property strategy and innovation contract template that seeks to appropriately balance the commercial interests of industry and Defence's strategic investment objectives. Defence recognises the critical role that intellectual property plays in fostering and encouraging innovation and delivering vital capability to the Australian Defence Force. The Defence Innovation Hub's intellectual property provisions seek to achieve an appropriate balance between the interests of Defence and industry. Defence will not seek to own innovation intellectual property unless there are compelling reasons.
52. Since its launch in December 2016, the Defence Innovation Hub has announced 10 investments. Five of these investments were NSW-based companies.
- a. \$3.17 million innovation contract between Defence and Ron Allum Deepsea Services will explore the feasibility of a novel, high-performance autonomous glider for long-endurance undersea surveillance.
 - b. \$618,000 innovation contract between Defence and Newcastle-based Armor Composite Engineering will seek to mature and further progress a new body armour capability, which could potentially be used by Australian Defence Force personnel in close protection roles.
 - c. \$97,000 innovation contract between Defence and Sydney-based Berkeley Information Technology will explore the feasibility of a software solution to support the protection of documents used on Defence information and communication systems. In an increasing cyber threat environment, this technology has the potential to negate unintentional data breaches as well as malicious insider attacks.
 - d. \$275,000 innovation contract between Defence and Saber Aeronautics Australia will explore the development of an innovation that will use machine learning technology for autonomous identification and modelling of electronic threats.
 - e. \$218,000 innovation contract between Defence and Trang Imagineering will explore the development of 3D sensors that have been used in the mining industry for potential use by the Australian Defence Force for threat monitoring in conflict zones. This innovation has significant potential for use by the Australian Defence Force, such as identifying areas of ground disturbance where Improvised Explosive Devices, or other threats, might be hidden, and identifying recent enemy movements based on 3D scanning of changes to terrain.
53. Since the launch of the program in December 2016, as at 12 July 2017, a total of 222 proposals have been submitted through the Defence Innovation Hub. Of these, 37 % have been from NSW and Australian Capital Territory (ACT)-based organisations. A number of NSW-based organisations have offices in or around the ACT region, such as Queanbeyan, to take advantage of close proximity to Defence Headquarters in the ACT.

Next Generation Technologies Fund

54. The Next Generation Technologies Fund (Next Gen Tech Fund) has been established to facilitate new approaches to strategic research partnerships to meet future Defence needs. The Next Gen Tech Fund is an important part of the new Defence approach to innovation across the entire Defence enterprise, which also includes the Defence Innovation Hub and CDIC.
55. With a budget of \$730 million over ten years, the Next Gen Tech Fund is addressing Defence science and technology priorities through collaborative programs with academia, publicly funded research agencies and industry. This approach leverages the broader capability of the national innovation sector.
56. The engagement mechanisms in the Next Gen Tech Fund are varied in scale and purpose. They include Defence Cooperative Research Centres, a “Grand Challenges” program, university research networks including the Australian-US Multi-University Research Initiative (AUSMURI), the Small Business Innovation Research for Defence (SBIRD) program, and Defence participation in existing technology accelerator initiatives.
57. Through the Next Gen Tech Fund, Defence is seeking to partner with the best research and innovation capabilities that Australia has to offer. Where possible, Defence is ensuring that partners are selected through broad national engagement mechanisms which determine merit and capacity to contribute to Defence priorities.
58. The focus is to enhance collaboration between Defence, industry, academia, and publicly-funded research agencies to produce game-changing technologies which will feed the innovation pipeline for Defence industry. This will create opportunities to increase the success rate for industry commercialisation of public funded research with the intention of developing defence capability and enhancing national global competitiveness. This requires more effective coordination of every element of the national innovation system and state government support is welcome wherever it is possible.
59. The Next Gen Tech Fund initiatives already under way are strongly engaged with universities and defence industry in NSW:
 - a. The first Grand Challenge addressing ‘Counter Improvised Threats’ was announced by the Minister for Defence Industry on 26 April 2017. Information sessions were held early in May across Australia. The NSW information session held in Sydney attracted 144 registrants from across defence industry (39% of attendees), universities (54% of attendees) and government. Proposals from NSW organisations are amongst the 200+ that have been received and are now being down-selected for funding, with initial contracting planned to proceed early in FY 2017-18. The budget for the first Grand Challenge is \$10 million over the three years from 2017-2018.
 - b. The agreement with CSIRO’s Data61 to address the Defence Science and Technology priority in Cyber Security was signed on 24 March 2017. This agreement is funding Defence-CSIRO collaborations with 9 Australian Universities who are Data61 University Collaboration Partners, including UNSW and Sydney University. The CSIRO and Defence are co-investing \$4 million and \$10.5 million respectively over three years in the partnership.

- c. The Next Gen Tech Fund has commenced investment in a medical countermeasures program, with \$2.5 million committed in FY 2016-17, matching similar levels of co-investment from CSIRO. Under this program, a National Capability Audit has been conducted, with strong participation from academia and industry in NSW. Two workshops were held in NSW to date, to determine relevant industry and university research and innovation capabilities in fields such as vaccine development. The aim is to understand how to grow NSW innovation sector participation in this Next Gen Tech Fund research program in future years.
- d. Through an open competitive call for proposals, \$5.7 million has been committed to 59 projects with 22 Australian universities. In a highly competitive field, 10 proposals from six universities in NSW were successful. Researchers at Macquarie, Newcastle, Wollongong, Sydney, Western Sydney and UNSW will undertake 10 projects with funding totalling \$965,000.
- e. Sydney University will undertake five projects in advanced sensors, cyber technology, multidisciplinary materials sciences and trusted autonomous systems with funding totalling \$499,000. Macquarie, Newcastle, Wollongong and Western Sydney will receive an average of \$100,000 each for projects in advanced sensors, cyber technology, multi-disciplinary materials sciences and space capabilities.
- f. NSW universities are eligible to participate in the AUSMURI grant program, announced in May 2017. Open to all Australian universities, AUSMURI will fund joint research programs with US universities, separately funded by the US Department of Defense. In the current round, Australian universities have been invited to contribute to research programs that fall under three priority areas: Quantum Technologies, Multidisciplinary Material Sciences and Trusted Autonomous Systems. Each winning bid (up to three, one per topic) will be awarded up to \$1 million per year for 3-5 years.
- g. Defence is running an ongoing series of National Technology Foresighting Symposiums to strengthen understanding of future technologies of interest to Defence. The last two events have been held in Sydney with local universities as the major partners. There was strong participation from NSW universities and defence industry, with more than 200 participants attending these events. Defence partnered with UNSW to deliver the symposium addressing the theme of 'Trusted Autonomy', with 135 delegates attending; the second symposium was held in partnership with the University of Sydney, addressing the theme 'Information, Knowledge and Digital Disruption', relating to the Defence priority topics of Cyber, and Integrated Intelligence, Surveillance and Reconnaissance.
60. Several Next Gen Tech Fund programs yet to launch will also be open to participation from NSW defence industry and universities. The SBIRD targets innovation for Defence in SMEs. Modelled on the successful and long-running US Small Business Innovation Research program, Defence has piloted the proposed engagement model with a number of SMEs for consultation and feedback prior to launch. Details of the model are currently being finalised with launch anticipated in FY 2017-18.
61. A Defence Cooperative Research Centre (CRC) program is being mounted under the NGTF with the first Defence CRC in Trusted Autonomous Systems launched this month with a \$50 million investment. NSW universities are amongst those already engaged in discussions with Defence regarding potential participation.

62. More broadly, Defence Science and Technology (DST) Group is supporting the establishment of the NSW Defence Innovation Network (DIN). The DIN will operate in a similar manner to the Defence Science Institute (DSI) in Victoria which links DST with State university networks. DST also has an active research program with NSW universities with 74 research and collaborative agreements in place with 7 NSW universities worth \$8.4 million. Funding for these agreements comes from DST, major Defence acquisition projects, and the Next Gen Tech Fund. DST also supports a number of initiatives intended to promote STEM and student professional development programs. NSW universities are an active part of this program. Over the past three years, DST has engaged 35 early career researchers from NSW universities.
63. There are considerable opportunities for NSW industry and the research sector to collaborate with Defence and benefit from Defence programs.

Current New South Wales Defence Industry Involvement in Defence Acquisition and Sustainment Projects

Acquisition

Project	Acquisition Projects	Estimated Value (\$m) FY2016-17
AIR 5276 CAP2	<p>AP-3C Capability Assurance Program 2</p> <p>Airbus Group Australia Pacific Ltd (Richmond) is contracted to the Structural Integrity Remediation Program.</p> <p>CAE Australia Pty Ltd (Richmond) is contracted to the Advanced Flight Simulator Visuals Systems Replacement and Mid Life Rejuvenation Program.</p>	0.603
AIR 9000 Ph 8	<p>Future Naval Aviation Combat System Helicopter</p> <p>Freight, building lease costs and legal fees in association with the project. The aircraft are being acquired under a FMS arrangement.</p>	0.8
JP 9000 Ph 7	<p>Helicopter Aircrew Training System</p> <p>Boeing Defence Australia Ltd is the lead contractor for the provision of the new Helicopter Aircrew Training System based on 15 EC135 Helicopters and associated simulators.</p>	122.5
JP 2008 Phase 3H	<p>Wideband Satellite Communication Terminals</p> <p>L-3 Technologies Oceania Pty Ltd (Waverton) provides the 51 Wideband Global Satellite Communications satellite terminals.</p>	5.4
JP 2086 Ph 1	<p>Mulwala Redevelopment Project</p> <p>Lend Lease (Mulwala) provides construction and commissioning of new propellant plant.</p>	16.3

<p>AIR 5416 Ph 4B2</p>	<p>Large Aircraft Infrared Counter Measures Project</p> <p>AIR 5416 Phase 4B2 has been established to install the Northrop Grumman Large Aircraft Infrared Countermeasures system on the RAAF C-130J aircraft. All twelve aircraft will be modified with this capability. The initial four have been modified in the US by Lockheed Martin and the remaining eight will be modified in Australia by Airbus Group Australia-Pacific Pty Ltd, at RAAF Base Richmond (Bankstown).</p>	<p>0.96</p>
<p>AIR 5431 Ph 1</p>	<p>Defence Deployable Air Traffic Management and Control System</p> <p>Indra Australia Pty Ltd is contracted to deliver three systems.</p>	<p>6.8</p>
<p>AIR 7000 Ph2</p>	<p>Maritime Patrol and Response Aircraft System</p> <p>Henchman Products supplies S&TE General Tooling, Tool Boards, Fly Away Kits, Fire Storage Cabinets.</p> <p>Blackwoods provides Personal Protection Equipment.</p>	<p>0.46</p> <p>0.08</p>
<p>AIR 5077 Ph 3</p>	<p>E-7/A Airborne Early Warning And Control System</p> <p>Boeing Defence Australia Ltd (Williamstown) provides a range of engineering and logistics advice for the Project.</p>	<p>2.2</p>
<p>AIR 5077 Ph 5A</p>	<p>E-7/A Airborne Early Warning And Control Interoperability Compliance Upgrade</p> <p>Boeing Defence Australia (Williamstown) is the lead contractor for the provision of interoperability compliance upgrades of the six E-7A Wedgetail aircraft and support systems.</p>	<p>11.2</p>
<p>JP 2097 Ph 1B</p>	<p>Enhancement to Special Operations Capability</p> <p>Supacat Pty Ltd manages the design and delivery of 89 Special Operations Vehicles – Commando.</p> <p>Baker & Provan is the vehicle assembly partner.</p>	<p>9.0</p>

<p>JP 199 Ph 1</p>	<p>Establishing an enhanced Special Operations Command</p> <p>The project is delivering a suite of equipment to Special Operations Command for Special Forces operations.</p> <p>Bale Defence Industries Pty Ltd (Port Macquarie) is delivering Rough Terrain Vehicles, including weapons carriage kits.</p>	<p>4.3</p>
<p>LAND 125 Ph 3B</p>	<p>Soldier Enhancement – Survivability</p> <p>The project is modernising and enhancing the survivability of individual close combat personnel.</p> <p>Frontline Safety Australia (Carrington) supplies Ballistic and Laser Ocular Protection Helmet.</p>	<p>2.1</p>
<p>LAND 125 Ph 3C</p>	<p>Soldier Enhancement – Lethality Enhanced F88 Rifle</p> <p>Thales Australia Ltd (Lithgow) Small Arms Factory conducts the design, development and production of the Enhanced F88 Steyr rifle under LAND 125 Phase 3C; and Factory Thorough Rebuild for Direct Fire Support Weapons.</p>	<p>18.0</p>
<p>AIR 9000 Ph 2</p>	<p>Taipan Multi Role Helicopter (MRH90)</p> <p>CAE Australia Pty Ltd (Silverwater) is the prime contractor providing management and support of the simulators supporting Taipan MRH90 operations.</p> <p>Thales Australia provides software support services for mission management systems for both Taipan MRH90 and Tiger Armed Reconnaissance Helicopter fleets.</p>	<p>2.9</p> <p>1.0</p>

Sustainment

Fleet	Sustainment Activities	Estimated Value (\$m) FY2016-17
CN01	<p>Adelaide Class Frigate</p> <p>Thales Australia (Garden Island and Waverton) provides ship repair and maintenance, and combat system support.</p> <p>BAE Systems Australia Ltd (Garden Island) provides integrated materiel support maintenance.</p> <p>H.I.Fraser Pty Ltd (Warriewood) provides gas and fluid equipment supplies.</p> <p>Thales Underwater Systems (Rydalmere) provides sonar capabilities.</p>	114.1
CN02	<p>Anzac Class Frigate</p> <p>WAMA - Warship Asset Management Agreement is comprised of BAE Systems Australia Naval Ship Management (Australia) Pty Ltd and SAAB Australia Pty Ltd each are a member of Warship Asset Management Agreement responsible for upgrade, maintenance and inventory support for the Anzac Class Frigates and associated support systems.</p> <p>Thales Australia provides docking and ship repair tasks.</p>	28.7
CN03	<p>S-70B-2 Seahawk Classic Helicopter</p> <p>BAE Systems Australia Pty Ltd (Yerriyong) provides deeper level maintenance support to the Army Black Hawk, along with maintenance support for Seahawk Classic.</p>	15.2
CN05	<p>AS350BA Squirrel Helicopter</p> <p>Raytheon (Yerriyong) provides in-service support to AS350BA Squirrel helicopters</p>	10.17
CN07	<p>Aerial Delivery Targets</p> <p>Air Target Services and Air Affairs Australia provide services and aerial target inventory required for the provision of aerial towed target services to the Australian Defence Force</p>	1.1

<p>CN43</p>	<p>Auxiliary Oiler Replenishment</p> <p>Thales Australia (Garden Island and Waverton) provides ship repair and maintenance.</p> <p>Rolls-Royce Australia Services maintenance and engineering support contractor for HMAS Success.</p>	<p>35.9</p>
<p>CN14</p>	<p>Mine Hunter Coastal</p> <p>Thales Australia (Newcastle and Waverton) provides in-service support contract.</p> <p>Thales Underwater Systems (Rydalmere) provides sonar capabilities.</p> <p>BAE Systems (North Ryde) provides tactical data systems.</p>	<p>65.6</p>
<p>CN22</p>	<p>Navy and Shore Communications</p> <p>Boeing Defence Australia undertakes Defence High Frequency Communications System maintenance.</p> <p>Electrotech (Brookvale) maintains the Satellite TV at Sea systems and GMDSS Radios.</p> <p>Thales Australia (Rydalmere) provides in-service support services to Maritime Communications Modernisation sustainment team, sustaining the Maritime Tactical Wide Area Network (MTWAN).</p>	<p>2</p> <p>1</p> <p>2</p>
<p>CN 23</p>	<p>Mine Warfare Command Support System</p> <p>Solutions from Silicon provides software support for sustainment of Mine Warfare Tactical Command Software.</p>	<p>0.25</p>
<p>CN34&36</p>	<p>Landing Helicopter Dock (LHD) & Landing Ship Dock (LSD)</p> <p>KBR (Sydney) provides capability support coordination services for the LHDSPO providing asset management and independent sustainment expertise and assurance services.</p> <p>BAE Systems provides in service support services for the Canberra Class LHDs.</p> <p>UGL Engineering (North Sydney) provides in service support services for the LHD Landing Craft.</p> <p>A&P Australia Ltd provides in service support services for the LSD (HMAS Choules).</p>	<p>156.8</p>

<p>CN35</p>	<p>MH-60R Seahawk Romeo</p> <p>Maritime Helicopter Support Company (Nowra Hill) provides in-service support to the Navy MH-60R Seahawk “Romeo” helicopter.</p>	<p>67.2</p>
<p>CN40</p>	<p>Defence Destroyer Guided</p> <p>BAE Systems Australia – Transition Support Period Managing Contractor Services</p>	<p>5.853</p>
<p>CN 42</p>	<p>Garden Island Dock Operation & Reticulated Services</p> <p>Thales Australia (Garden Island) is contracted to provide dock and reticulated services to the Commonwealth as part of its role in operating the Captain Cook Graving Dock in support of RAN ship repair and maintenance.</p>	<p>12.6</p>
<p>CN 49</p>	<p>Cross-Platform Items of Supply for Maritime Capability (MCPSP0)</p> <p>GE (Sydney) provides in-service support for LM2500 to FFG, ANZ and LHDs.</p> <p>RFD (AUST) PTY LTD trading as Survitec provides in-service support for RAN Life Rafts and PALS for the RAN fleet.</p> <p>Innovasys (Newcastle) provides services support for Test Equipment in relation to Circuit Card Assemblies.</p> <p>MSA Aust (Sydney) provides in service support for the OCCABA/ELSRD for the RAN Fleet.</p>	<p>9.3</p>
<p>CA 48</p>	<p>MRH90 Taipan</p> <p>Airbus Group Australia Pacific is the prime contractor for in-service support of the MRH90 Taipan Helicopter.</p>	<p>23.6</p>

<p>CAF02</p>	<p>F/A-18 Hornet Weapon Systems</p> <p>Boeing Australia (Williamtown/Newcastle) is the major provider of engineering services for the F/A -18 Classic Hornet deeper maintenance and aerospace systems integration as well as aircraft painting services.</p> <p>BAE Systems Australia Ltd provides software code development and data analysis for the Hornet Mission Data & Service Life Monitoring System.</p> <p>Raytheon Australia provides Hornet aircrew training systems and maintenance on the Classic Hornet radar system.</p>	<p>29</p>
<p>CAF03</p>	<p>Hawk Lead-In Fighter</p> <p>BAE Systems Australia Ltd (Williamtown/Newcastle) operates out of its commercial premises located at Newcastle Airport, acting as head office for engineering-related activities for the 33 Hawk Lead-In Fighter (Hawk MK 127) situated at both RAAF Bases Williamtown RAAF Pearce. Specific to RAAF Williamtown is deeper level maintenance support to its allocated 19 Hawk MK127 aircraft and associated trainer systems. As of October 2015, BAE started operational maintenance of aircraft, with full operations from July 2016.</p>	<p>67</p>
<p>CAF04</p>	<p>AP-3C Orion Weapons Systems</p> <p>Airbus Group Australia Pacific Ltd (Bankstown) provides aircraft maintenance & platform systems support.</p> <p>Standard Aero (Australia) Pty Ltd (Chester Hill) repair and maintains the AP-3C T56-14 propulsions system.</p>	<p>6.8</p>
<p>CAF06</p>	<p>C130J-30 Weapons Systems</p> <p>Airbus Group Australia Pacific Ltd (Bankstown) provides through life support.</p> <p>Standard Aero (Australia) Pty Ltd (Chester Hill) provides propulsion system repair and maintenance.</p> <p>CAE Australia Pty Ltd (Silverwater) provides management and support of C-130J aerospace simulator.</p>	<p>120.0</p>

CAF09	<p>Special Purpose Aircraft</p> <p>General Electric Capital Holdings (Sydney) leases the Special Purpose Aircraft fleet to Defence.</p>	26.6
CAF10	<p>PC-9/A Weapon System</p> <p>Northrop Grumman Integrated Defence Services Pty Ltd (Villawood) provides engine and propulsion system support.</p>	4.5
CAF11	<p>B300 (King Air) School of Air Warfare Training</p> <p>CAE Australia Pty Ltd (Silverwater) provides management and support for its simulator used by Air Force Training Group at East Sale, Victoria.</p>	2.5
CAF12	<p>Air Traffic Control Systems</p> <p>Raytheon Australia Pty Ltd (Williamstown) supports the Australian Defence Air Traffic System.</p> <p>BAE Systems Australia Pty Limited (North Ryde) supports the Australian Military Airspace Control Communications System capability.</p> <p>Rohde and Schwarz (Australia) Pty Ltd (North Ryde) supports the Tactical Air Operations Tower and Air Traffic Control communications capability.</p>	<p>6.5</p> <p>7.6</p> <p>1.5</p>
CAF 14	<p>Tactical Air Defence Radar System</p> <p>Lockheed Martin Australia Electronic Systems (Williamstown) supports the Tactical Air Defence Radar System capability.</p>	7.6
CAF16	<p>Air Component Command and Intelligence Systems</p> <p>Thales Australia (Rydalmere) provides sustainment support for the deployable command and intelligence hardware and computer systems.</p> <p>Pacific Aerospace Consulting Ltd (Yerriyong) provides mission planning support in respect of the Navy MH-60R Seahawk Romeo helicopter.</p>	<p>4.1</p> <p>0.7</p>
CAF20	<p>Airborne Early Warning And Control System</p> <p>Boeing Defence Australia (Williamstown) provides in-service engineering, maintenance and supply support.</p>	68.5

CA05	<p>Ground Based Air Defence Program</p> <p>Thales Australia (Rydalmere) provides sustainment and medium grade repair for the Australian Man-portable Surveillance & Target Acquisition Radar.</p>	1.3
CA09	<p>Indirect Fire Support Weapons</p> <p>Rockwell Collins Australia (Lane Cove) provides sustainment and medium grade repair for the Digital Terminal Control System.</p>	9.7
CA08 & CA10	<p>Small Arms Fleet and Direct Fire Support Weapons Fleets</p> <p>Thales Australia (Lithgow Arms) Small Arms Factory (Lithgow) provides spare parts and repair and maintenance support and Factory Thorough Rebuild for Direct Fire Support Weapons.</p>	8.8
CA12	<p>Tiger Armed Reconnaissance Helicopter Fleet</p> <p>Thales Australia Ltd provides repair and maintenance services (via subcontract through the prime contractor, Airbus Group Australia Pacific) for the repair and maintenance of avionic/electronic equipment.</p>	16.7
CA19	<p>Commercial Vehicles</p> <p>Sgfleet (Pymble) manages the Defence commercial vehicle fleet as the whole-of-Government fleet services contractor.</p>	79.3
CA29	<p>Surveillance Systems</p> <p>Thales Australia Ltd undertakes heavy grade repair of thermal weapon sights and hand held thermal imagers.</p>	1.0
CA30	<p>Simulation Program</p> <p>Meggitt Australia Headquarters (Albury) manages and operates the WTSS facilities located around Australia.</p>	7.0
CA31	<p>Communications Systems</p> <p>Thales Australia (Moorebank) provides sustainment support for the RAVEN / WAGTAIL suite of VHF and HF radios, MBITR VHF radios and the Australian Defence Force suite of SOTAS and AN/VIC3(A) communications harnesses.</p>	3.1

CA31	<p>Battlefield Telecommunications Network</p> <p>BAE Systems Australia Pty Limited (North Ryde) supports a suite of assemblages used to provide satellite communications to land forces.</p>	2.5
CA39	<p>Australian Defence Force Clothing</p> <p>Akubra (Kempsey) manufactures Australian made Slouch Hats for the Australian Defence Force. Akubra has advised CLOSPO that the Defence Deed has contributed to Akubra employing an additional 12 staff over the past 12 months.</p> <p>Crossfire Australia (Braidwood) provides the General Purpose (GP) Jacket for Army and Air Force.</p> <p>Redback Boot Company (Waterloo) manufactures and supplies combat boots to Army and Air Force.</p> <p>John Star (Banksmeadow) is in contract to provide the Commonwealth with Cadet Boots for all services.</p>	1.5 5.6 3.7 0.9
CA40	<p>Joint Command Control Communication Computers and Intelligence Systems</p> <p>Thales Australia (Rydalmere) provides production and sustainment services for deployable command and intelligence hardware and computer systems</p>	27.9
CA48	<p>Taipan MRH90 Fleet</p> <p>Thales Australia Ltd (Rydalmere) provides repair and maintenance services (via subcontract through prime contractor Airbus Group Australia Pacific) for avionic/electronic equipment.</p>	4.0
CA59	<p>Explosive Ordnance - Army Munitions</p> <p>Thales (Mulwala) supplies propellant and high explosives.</p>	70.3
JHC01	<p>Health Systems</p> <p>Anspec Pty Ltd (Thornleigh) provides services to source, warehouse and distribute medical consumables, dental consumables and pharmaceuticals.</p>	27.9
CA32	<p>Advanced SATCOM Terrestrial Infrastructure System</p> <p>BAE Systems (North Ryde) supports 14 naval systems and undertakes Wideband Global Systems Testing.</p>	4.5

Significant Defence-Owned Bases and Training Areas in NSW

Base		Function
1.	HMAS <i>Albatross</i> (Nowra)	Operational and logistics support base for Navy's Fleet Air Arm, including three Squadrons.
2.	HMAS <i>Penguin</i> (Mosman)	Accommodates Navy's Diving School, Hydrographic School, Submarine and Underwater Medicine Unit, and Australian Defence Force Centre for Mental Health. Also includes the separate Pittwater Annexe.
3.	HMAS <i>Waterhen</i> (Waverton)	Supports Mine Warfare and Clearance Diving Group elements and the LHD Landing Craft training school.
4.	HMAS <i>Watson</i> (Watsons Bay)	Navy's principal warfare and navigation training establishment.
5.	Garden Island Defence Precinct (Sydney)	Navy's main operational, maintenance and repair base for east coast based major fleet units. Includes HMAS <i>Kuttabul</i> , Fleet Base East and the Captain Cook Graving Dock.
6.	RAAF Base Glenbrook (Glenbrook)	Location of Headquarters Air Command.
7.	RAAF Base Richmond (Richmond)	Accommodates command, training, support, administrative and other functions of Air Mobility Group, Surveillance and Response Group as well as operational units. Operational base for C-130 Hercules aircraft.
8.	RAAF Base Williamtown (Williamtown)	Command, operational and support elements of Air Combat Group. Also accommodates air surveillance and battlefield management command and support elements, as well as the Australian Defence Force Warfare Centre.
9.	RAAF Base Wagga (Wagga Wagga)	Air Force initial recruit and technical training base.
10.	Blamey Barracks (Kapooka) and Training Area	Location of the Army Recruit Training Centre.

Significant Defence-Owned Bases and Training Areas in NSW

Base		Function
11.	Defence Establishment Orchard Hills (Sydney)	Explosive ordnance storage and home of the Defence Explosive Ordnance Training School and other units.
12.	Headquarters Joint Operations Command (Bungendore)	The General John Baker Complex houses Headquarters Joint Operations Command which plans, mounts and controls all Defence operations.
13.	Liverpool Military Area – including Holsworthy Barracks, Holsworthy Field Training Area and the Defence National Storage and Distribution Centre (Sydney)	Accommodates significant Army and Defence capabilities including special operations forces, military policing, logistics, aviation and engineering units (including the School of Military Engineering), Reserve units (including Headquarters 5 Brigade) and other functions. Also has a large contiguous training area.
14.	Lone Pine Barracks (Singleton) including Singleton Field Training Area	Location of Army's School of Infantry and a detachment of the Special Forces Training Centre. Training area for manoeuvre and live firing.
15.	Mulwala Explosives Factory (Mulwala)	Defence explosives and propellant manufacturing facility.
16.	Myambat Explosive Ordnance Facility (Denman)	Explosive ordnance storage depot.
17.	Randwick Barracks (Sydney)	Accommodates logistic (including Defence medical and dental functions), specialist and Reserve units. Navy Training Systems Centre - Randwick is also located here.
18.	Timor Barracks (Dundas)	Location of the Army Reserve's Headquarters 8 Brigade, other Reserve sub-units and Cadets.
19.	Victoria Barracks, Sydney (Sydney)	Accommodation for Army's Headquarters Forces Command, as well as other command and support units.

Significant Defence-Owned Bases and Training Areas in NSW

Base		Function
20.	Evans Head Air Weapons Range (Evans Head)	Air-to-surface and surface-to-surface weapons firing range.
21.	Salt Ash Air Weapons Range (Salt Ash)	Air-to-surface weapons range.

These bases and training areas have been operating in their current locations for many decades. The exception is Headquarters Joint Operations Command at Bungendore (NSW) which formally opened in early 2009 and operates under a Public Private Partnership arrangement with Defence.